



### Overview

Although diagnosis of HIV infection is not a direct measure of disease incidence, recent trends in the distribution of HIV infection diagnoses are the best available indicator for who is most at risk of HIV infection. While the distribution of HIV infection diagnoses across gender and race/ethnicity has remained fairly unchanged in the past five years, there has been a shift in race/ethnicity distribution among females. From 1999 to 2006, the proportion of females diagnosed with HIV infection who are black (non-Hispanic) increased from 40% to 49%, while the proportion of white (non-Hispanic) females decreased from 29% to 24%.

There has also been a shift in the distribution of HIV infection diagnoses by place of birth. From 1999 to 2006, the proportion of HIV infection diagnoses in people born outside the US increased from 19% to 28%; among females 29% to 41%. Among black (non-Hispanic) females diagnosed with HIV infection within the years 2004 to 2006, 65% were born outside the US compared to 11% of white (non-Hispanic) females and 27% of Hispanic females.

Changes have also occurred in the distribution of HIV infection diagnoses by exposure mode. The proportion of all HIV infection diagnoses with male-to-male sex as an exposure mode increased from 28% in 1999 to 42% in 2006. Among males, the proportion of HIV infection diagnoses with male-to-male sex as the reported exposure mode increased from 40% in 1999 to 57% in 2006. The proportion of cases with injection drug use as the reported exposure mode decreased from 30% in 1999 to 10% in 2006. While caution should be used in interpretation, it is notable that jurisdictions across the nation have seen a similar decline in the incidence of HIV infection diagnosis among injection drug users.

The following analyses depict trends in HIV infection diagnosis and describe populations at risk of HIV infection in Massachusetts in greater detail.

### Trends in HIV Infection Diagnoses from 1999 to 2006

#### General Statistics

- Of all people diagnosed and reported with HIV/AIDS in Massachusetts, 20,455 were diagnosed with HIV infection before 1999, 1,326 were diagnosed with HIV infection in 1999, 1,183 in 2000, 1,020 in 2001, 1,081 in 2002, 963 in 2003, 972 in 2004, and 884 in 2005. As of November 1, 2007<sup>1</sup>, 700 HIV diagnoses were reported for 2006. This number will continue to increase as additional cases are reported, likely resulting in a plateau in the number of HIV infection diagnoses over the past four years. As Massachusetts providers who report HIV diagnoses are still transitioning from a change on January 1, 2007 from code to name-based reporting requirements, the 2006 HIV diagnoses data are far more preliminary than one would typically expect by November 1, 2007.

<sup>1</sup> Please note that previous editions of the Epidemiologic Profile presented people living with HIV/AIDS as of December 31, whereas this edition presents people living with HIV/AIDS as of November 1 due to the timing of this release. Future editions will continue to present people living with HIV/AIDS as of December 31.

#### Gender

- From 1999 to 2004, the distribution of people diagnosed with HIV infection by gender was 68% to 71% male and 29% to 32% female. In 2005 and 2006, males accounted for a larger (74%) and females a smaller (26%) proportion of HIV diagnoses than in previous years.

#### Race/Ethnicity

- Compared to people diagnosed with HIV infection before 1999, black (non-Hispanic) individuals and Hispanic individuals represent a larger proportion of reported cases among people diagnosed from 1999 to 2006.

- From 1999 to 2006, the proportion of HIV diagnoses among white (non-Hispanic) individuals ranged from 38% to 44%, black (non-Hispanic) individuals from 29% to 34% and Hispanic individuals from 23% to 26%.

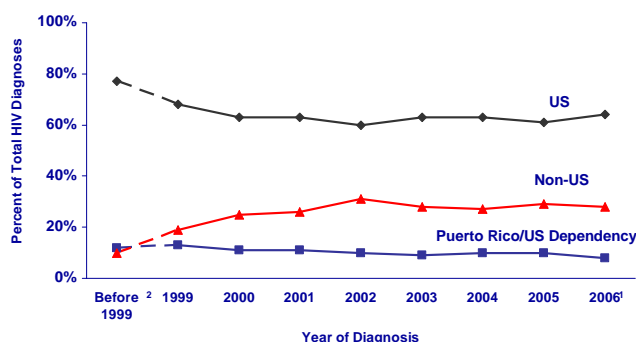
### Gender and Race/Ethnicity

- In the years 1999 through 2006, the proportion of HIV infection diagnoses among white (non-Hispanic) **males** ranged from 46% to 51%, black (non-Hispanic) **males** from 21% to 28% and Hispanic **males** from 23% to 26%.
- Among **females** diagnosed with HIV infection from 1999 to 2005, the proportion of black (non-Hispanic) females increased from 40% to 53%, while the proportion of white (non-Hispanic) females decreased from 29% to 16%. In 2006 the proportion of black (non-Hispanic) females decreased to 49% while the proportion of white (non-Hispanic) females increased to 24%. From 1999 to 2006, the proportion of Hispanic females ranged from 24% to 31%.

### Place of Birth and Gender

- From 1999 to 2006, the proportion of people born outside the US (or Puerto Rico and other US dependencies) among those diagnosed with HIV infection increased from 19% to 28%.

**Figure 1. Percentage Distribution of People Diagnosed with HIV Infection by Place of Birth and Year of Diagnosis: Massachusetts, Before 1999, 1999–2006<sup>1</sup>**



<sup>1</sup> 2006 data are preliminary; <sup>2</sup> Note: a dashed line is used to distinguish between pre-1999 data (which is an aggregate of multiple years before the implementation of HIV surveillance in 1999) and annual data for subsequent years. Data Source: MDPH HIV/AIDS Surveillance Program; Data as of 11/1/07

- From 1999 to 2006, the proportion of **males** diagnosed with HIV infection born outside the US (or Puerto Rico and other US dependencies) increased from 14% to 23%.

- During the same time period, the proportion of **females** diagnosed with HIV infection and born outside the US (or Puerto Rico and other US dependencies) increased from 29% to 41%.

### Exposure Mode and Gender

- Among **males** diagnosed with HIV infection, the proportion of diagnoses with male-to-male sex as the primary reported exposure mode increased from 40% in 1999 to 57% in 2006.
- The proportion of HIV exposures among **males** attributed to injection drug use (8%) has decreased from prior years.
- From 1999 to 2006, the proportion of HIV infection diagnoses in **females** presumed exposed to HIV through heterosexual sex with a partner or partners of unknown risk and HIV status (presumed heterosexual exposure) increased from 31% to 48%.
- Among **females** diagnosed with HIV infection, the proportion with injection drug use as the reported exposure mode decreased from 30% in 1999 to 16% in 2006.

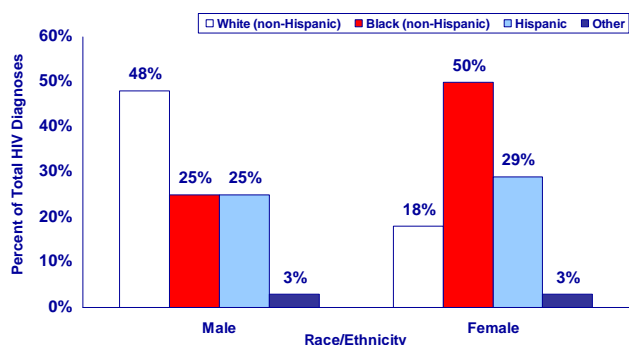
### Age at HIV Infection Diagnosis

- In 2006, less than 1% of people diagnosed with HIV infection were under 13 years old, 9% were 13–24 years old, 11% were 25–29 years old, 12% were 30–34 years old, 19% were 35–39 years old, 18% were 40–44 years old, 15% were 45–49 years old, and 17% were 50 years old or older.
- Fourteen percent of females diagnosed with HIV infection in 2006 were 13 to 24 years old, compared to 8% of males.

### A Profile of People Recently Diagnosed with HIV Infection: Race/Ethnicity and Gender

- The distribution of race/ethnicity among persons diagnosed with HIV infection is different among males and females within the years 2004 to 2006. While 48% of **males** diagnosed with HIV infection within the years 2004 to 2006 were white (non-Hispanic), 50% of **females** diagnosed during this time period were black (non-Hispanic).

**Figure 2. People Diagnosed with HIV Infection Within the Years 2004–2006 by Gender and Race/Ethnicity: Massachusetts**

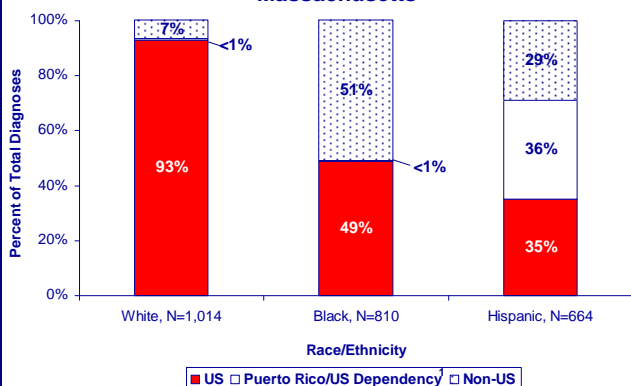


Data Source: MDPH HIV/AIDS Surveillance Program, Data as of 11/1/07

### Race/Ethnicity and Place of Birth

- Fifty-one percent of black (non-Hispanic) individuals diagnosed with HIV infection within the three-year period 2004 to 2006 were born outside the US, compared to 29% of Hispanic individuals and 7% of white (non-Hispanic) individuals.

**Figure 3. People Diagnosed with HIV Infection Within the Years 2004–2006 by Race/Ethnicity and Place of Birth: Massachusetts**



<sup>1</sup> 97% of people diagnosed with HIV infection from 2004–2006 that were born in a US Dependency were born in Puerto Rico.  
Data Source: MDPH HIV/AIDS Surveillance Program, Data as of 11/1/07

- The majority of non-US-born black (non-Hispanic) individuals diagnosed with HIV infection within the three-year period 2004 to 2006 are from Sub-Saharan Africa and the Caribbean; the majority of non-US-born Hispanic individuals are from Central and South America and the Caribbean. The majority of white (non-Hispanic) individuals are from Central and South America and North America and Europe.

### Race/Ethnicity, Place of Birth and Gender

- Forty-four percent of females diagnosed with HIV infection within the three-year period 2004 to 2006 were born outside the US compared to 22% of males. Among black (non-Hispanic) **females** diagnosed with HIV infection, the proportion born outside the US is 65% compared to 27% of Hispanic females and 11% of white (non-Hispanic) females. Among black (non-Hispanic) **males**, the proportion is 40% compared to 30% of Hispanic males and 6% of white (non-Hispanic) males.

### Race/Ethnicity and Exposure Mode

- While the predominant mode of exposure among white (non-Hispanic) individuals diagnosed with HIV infection within the years 2004 to 2006 is male-to-male sex (61%), the predominant mode of exposure among black (non-Hispanic) individuals is presumed heterosexual sex with partners of unknown risk and HIV status (presumed heterosexual exposure, 42%). Among Hispanic individuals, male-to-male sex accounts for 24%, and injection drug use and presumed heterosexual exposure each account for 23% of reported exposures to HIV infection.

### Race/Ethnicity, Exposure Mode and Gender

- Exposure mode among people diagnosed with HIV infection within the three-year period 2004 to 2006 varies by race/ethnicity among both males and females.
- Among **white (non-Hispanic) males**, male-to-male sex is the predominant exposure mode, accounting for 70% of reported exposures.
- Among **black (non-Hispanic) males**, presumed heterosexual sex with partners with unknown risk and HIV status (presumed heterosexual exposure) accounts for 32%, male-to-male sex 29% and injection drug use 9% of reported exposures.
- Among **Hispanic males**, exposure mode is more evenly distributed, with male-to-male sex accounting for 34% and injection drug use accounting for 25% of exposures.

For detailed data tables and technical notes please see Appendix

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- While the predominant reported mode of exposure among **white (non-Hispanic) females** diagnosed with HIV infection within the years 2004 to 2006 is injection drug use (41%), the predominant exposure mode among **black (non-Hispanic) females** is presumed heterosexual sex with partners of unknown risk and HIV status (presumed heterosexual exposure) (55%). Among **Hispanic females**, exposure mode is more evenly distributed with presumed heterosexual sex with partners of unknown risk and HIV status (presumed heterosexual exposure) accounting for 34%, heterosexual sex (with partners of known risk and HIV status) accounting for 34% and injection drug use accounting for 20% of exposures.

#### **Distribution by Gender and Health Service Region (HSR)**

- The Boston, Southeast, and Metro West regions have the highest proportion of males among those with HIV infection diagnosed within the three-year period 2004 to 2006 at 79%, 75% and 74%, respectively.
- The Central, Western, and Northeast regions have the highest proportion of females among people diagnosed with HIV infection within the three-year period 2004 to 2006 at 38%, 35% and 35%, respectively.

#### **Distribution by Race/Ethnicity and Health Service Region (HSR)**

- While white (non-Hispanic) individuals constitute the largest proportion of people recently diagnosed with HIV infection in the Southeast (56%), Metro West (50%), Central (37%) and Northeast (37%) regions, Hispanic individuals account for the largest proportion in the Western region (50%). In the Boston region black (non-Hispanic) individuals and white (non-Hispanic) individuals account for 39% and 38% of recent diagnoses, respectively.

#### **Distribution by Exposure Mode and Health Service Region (HSR)**

- Male-to-male sex is the predominant exposure mode for people diagnosed with HIV infection in the Boston (50%), Metro West (38%) and Southeast (43%) regions within the years 2004 to 2006.
- In the Western region, exposure mode is more evenly distributed, with injection drug use accounting for 26%, male-to-male sex 23%, presumed exposure through heterosexual sex with partners of unknown risk and HIV status 22%, and heterosexual sex (with partners of known risk and HIV status) 16% of reported exposures to HIV infection.
- In the Central region, presumed exposure through heterosexual sex with partners of unknown risk and HIV status is reported in 30% of exposures to HIV infection, injection drug use in 24% and male-to-male sex in 22%.
- In the Northeast region, presumed exposure through heterosexual sex with partners of unknown risk and HIV status accounts for 29%, male-to-male sex 27%, and heterosexual sex (with partners of known risk and HIV status) 13% of reported exposures to HIV infection.

#### **People at Risk of HIV Infection**

##### **State-funded HIV Counseling and Testing**

- In 2006, 47,603 HIV tests were performed at publicly funded HIV counseling and testing (C&T) sites, of which 0.9% (N=444) were positive.
- In 2006, more HIV tests were performed on males (64%, N=30,491) than females (35%, N=16,804) at publicly funded sites.
- The majority of HIV tests were performed on white (non-Hispanic) clients (42%, N=19,889) followed by Latino\* (26%, N=12,509) and African-American\* clients (18%, N=8,547).
- While 28% of positive HIV tests were among African-Americans\*, African-Americans accounted for only 18% of all tests conducted.

For detailed data tables and technical notes please see Appendix

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- Latinos\* accounted for 34% of positive HIV tests and 26% of all tests conducted.
- White (non-Hispanic) clients accounted for 23% of positive HIV tests and 42% of all tests conducted.
- By race/ethnicity, the highest percentages of positive HIV tests were among African-Americans\* at 1.4%, Brazilians\* at 1.3%, Latinos at 1.2% and Haitians\* at 1.2%.
- While people ages 20–24 years old (21%, N=9,894) account for the largest number of total tests across age categories, the percent of positive tests in this age group is low (0.4%).

\* Racial/ethnic categories collected for counseling and testing data differ from those collected for the HIV/AIDS surveillance data presented elsewhere in this report

## Behavioral Risk for HIV Infection

### Number of Sexual Partners

- Among 6,237 18–64 year old respondents to the 2005 and 2006 Massachusetts Behavioral Risk Factor Surveillance System (BRFSS) survey, 9% reported two or more sexual partners, 74% reported one partner, and 17% reported no sexual partners in the past year.
- The largest proportions of people reporting two or more partners were young (26% of 18–24 year olds reported two or more partners), were men (13% of men reported two or more partners compared to 6% of women), and were black (non-Hispanic) or Hispanic (17% of black individuals and 15% of Hispanic individuals reported two or more partners compared to 8% of white [non-Hispanic] and Asian individuals).
- Forty-three percent of **males** who had sex with male partners reported two or more sexual partners compared to 13% of males who had sex with opposite-sex partners.
- Thirty-five percent of **males** ages 18–24 years reported two or more sexual partners compared to 12% of males ages 25–34, 10% of males ages 35–44 and 5% of males ages 45–64.

- Eighteen percent of **females** ages 18–24 years reported two or more sexual partners compared to 6% of females ages 25–34, 3% of females ages 35–44 and 1% of females ages 45–64.

### Condom Use:

- Of 4,796 18–64 year old sexually active respondents to the 2005 and 2006 BRFSS 23% reported using a condom at last sexual encounter (24% of male respondents and 23% of female respondents).
- Thirty-seven percent of Hispanic and 43% of black (non-Hispanic) respondents reported condom use at last sexual encounter, compared to 21% of white (non-Hispanic) individuals.
- Fifty-eight percent of those reporting 3 or more sexual partners also reported condom use at last sexual encounter, compared to 50% of those reporting 2 partners and 19% of those reporting one partner.
- Of men reporting a same-sex partner, 50% reported condom use at last sex, while 23% of men with opposite-sex partners reported condom use at last sexual encounter.

### Data Sources:

HIV/AIDS Case Data: Massachusetts Department of Public Health, HIV/AIDS Surveillance Program, all data as of 11/1/07

Counseling and Testing Data: Massachusetts Department of Public Health, HIV/AIDS Bureau, Office of Research and Evaluation

BRFSS Data: Massachusetts Department of Public Health, Bureau of Health Statistics, Research and Evaluation, Behavioral Risk Factor Surveillance System